

Characterization of coagulase-negative staphylococci isolated from hospitalized patients in Tehran, Iran

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ABSTRACT

Coagulase-negative staphylococci (CNS) are a main cause of nosocomial infection. The main purpose of this study was to determination of frequency of CNS isolates in hospitalized patients and their susceptibility pattern to antimicrobial agents. During 11 month study, 65 CNS clinical isolates were recovered from hospitalized patients in different wards of hospital. In vitro susceptibility of isolates to 12 antimicrobial agents Penicillin; Ampicillin; Cephalothin; Cefoxitin; linezolid; Nitrofurantoin; Erythromycin; Norfloxacin; Gentamicin; Vancomycin; Chloramphenicol and Oxacillin was performed by Kirby-Bauer's Disk diffusion method according to Clinical and Laboratory Standards Institute (CLSI) criteria. Out of 1875 samples of hospitalized patients 65(3.47%) patients were infected with CNS. Twenty one (32.3 %) were isolated from the urine samples, 17(26.1%) from sputum, 15(23.1%) from pus samples, 8(12.3 %) from ear swabs, 3(4.7%) from fluid and 1(1.5%) from blood sample. All of CNS isolates were sensitive to nitrofurantoin. The rates of resistance to the majority of antibiotics tested varied between 4.5% and 100 %. The rate of resistance to beta lactam antibiotics, Chloramphenicol, erythromycin, gentamycin was high (more than 70%). The most of isolates remained susceptible to linezolid, and nitrofurantoin. All of isolates were susceptible to vancomycin. Multi-drug resistant CNS with reduced susceptibility to linezolid and nitrofurantoin are emerging pathogens of clinical concern. Monitoring of antibiotic resistance with attention to multi-resistant profile and aware to practitioners in the field is necessary.

Keywords: Coagulase-negative staphylococci; Antimicrobial susceptibility; Nosocomial infection.

INTRODUCTION

Nosocomial infections are important public health problems in developing countries as well as in developed countries. Nosocomial or hospital-acquired infections are usually defined as infections that are identified at least 48-72 hours following admission to hospital and health care facility [1]. The most frequent types of nosocomial infections are bloodstream infection (BSI), urinary tract infection (UTI), pneumonia and surgical-wound infection [2].

Coagulase-negative staphylococci (CNS) are a group of micro-organisms that known as normal biota of human skin and mucous membranes. CNS are consisting of 39 Species and 16 Species of

them are known to cause infection in human. Since the 1970s, CNS is recognized as important etiologic agents of a wide variety of human nosocomial infections. They account for 9% of nosocomial infections [4].

The two most frequently encountered CNS species in clinical samples are *Staphylococcus epidermidis* and *Staphylococcus saprophyticus*. Overall, *S. epidermidis* is the predominant agent in nosocomial infection, bacteremia, intravascular catheter-related infections, endocarditis, central nervous system shunt infections, urinary tract infections, ophthalmologic infections, dialysis-related infections and surgical wounds while *S. saprophyticus* is more associated with urinary tract